Notice No.7

Rules and Regulations for the Classification of Naval Ships, January 2021

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: November 2021

Amendments to	Effective date	IACS/IMO implementation (if applicable)
Volume 3, Part 1, Chapter 1, Section 2	1 January 2022	N/A
Volume 3, Part 1, Chapter 7 (New)	1 January 2022	N/A

Volume 3, Part 1,
Chapter 1
Ice Navigation – First-Year Ice Conditions

■ *Section 2*
Hull strengthening requirements

2.4 Shell plating

2.4.3 If a recognised ~~low friction surface~~ abrasion resistant coating is to be applied in way of the main ice belt and is to be maintained in good condition during service, the thickness determined in accordance with *Vol 3, Pt 1, Ch 1, 2.4 Shell plating 2.4.1* may be reduced by 1 mm. *See* the *Rules for the Manufacture, Testing and Certification of Materials, Ch 15 Corrosion Prevention, 2.13 Ice coatings.*

Volume 3, Part 1,
Chapter 7
Boat and Waterborne Operations

■ *Scope*

This Chapter details the requirements for the **BOATS** notation covering the onboard arrangements for the launch, recovery and carriage of small boats and watercraft; and for the interfacing of the vessel with waterborne craft alongside or persons in the water.

Where required, application of this Chapter will also facilitate the verification of the performance requirements of ANEP-77 NATO *Naval Ship Code, Chapter V, Regulations 5, 6, 7* and *12*.

■ *Section 1*
Functional requirements

1.1 Functional requirements

1.1.1 The vessel shall be capable of launching, recovering and carrying small boats and watercraft, and interfacing with waterborne craft alongside, or with persons in the water, as required in the defined operating conditions.

■ *Section 2*
Performance requirements

2.1 Performance requirements

2.1.1 The vessel arrangements shall be designed so as to minimise risks to personnel on board, or embarked in boats onboard, suspended or alongside during launch and recovery operations.

2.1.2 The design, construction, installation and operation of launch and recovery appliances shall be appropriate for the defined operating conditions and arranged so as to minimise risks to personnel on board, or embarked in boats on board, suspended or alongside during launch and recovery operations.

2.1.3 The vessel arrangements and launch and recovery appliances shall be compatible with the boats and watercraft assigned to them.

2.1.4 Arrangements shall provide for effective control over launch, recovery and alongside operations.

2.1.5 Arrangements for the transfer of people, liquids or cargo to and from the vessel to the sea surface or to watercraft alongside the vessel shall be designed, constructed and maintained so as to minimise risks to personnel onboard or alongside. (Requirements for underway replenishment are covered in *Vol 3, Pt 1, Ch 5 Replenishment at Sea (RAS) Systems*).

2.1.6 Appropriate Operator Guidance shall be provided.

■ *Section 3*
Verification requirements

3.1 Verification requirements

3.1.1 Compliance with the requirements in *Vol 3, Pt 1, Ch 7, 4 General Requirements* to *Vol 3, Pt 1, Ch 7, 9 Operator Guidance* is considered sufficient to satisfy the functional requirements and performance requirements defined above.

3.1.2 Where a designer offers a novel solution, an engineering safety and justification report is to be submitted, *see Vol 1, Pt 1, Ch 2, 2.2 Definitions 2.2.20*. The engineering safety and justification report is to demonstrate how the proposed solution will satisfy the functional requirements and performance requirements in *Vol 3, Pt 1, Ch 7, 1 Functional Requirements* and *Vol 3, Pt 1, Ch 1, 2 Performance Requirements*.

3.1.3 The Naval Administration may impose requirements additional to those in this Chapter.

3.2 Submission requirements

3.2.1 The following documentation is to be submitted for design review;

(a) **General Arrangement Plan**: A general arrangement plan of the parent vessel showing the following information:
- (i) position of each boat, watercraft, embarkation, transfer and recovery station;
- (ii) the tasks to be carried out at each station; and
- (iii) position of conning, control and observation positions.

(b) **Local Arrangement Plans**: Local arrangement plans for each boat, watercraft, embarkation and recovery station showing the following information (as applicable):
- (i) boat or watercraft position (stowed, embarked, turned out, alongside);
- (ii) control position and fields of view;
- (iii) observation positions and fields of view;
- (iv) lifesaving appliances and safety equipment;
- (v) fire-fighting appliances;
- (vi) maintenance facilities;
- (vii) equipment lockers;
- (viii) re-fueling, water, compressed air, and general electrical arrangements;
- (ix) launch and recovery appliances;
- (x) securing arrangements (onboard or alongside);
- (xi) fendering arrangement;
- (xii) painter arrangements and tending locations;
- (xiii) embarkation and recovery arrangements and equipment;
- (xiv) crew protection arrangements (rails, temporary barriers, attachment points);
- (xv) lighting arrangements (inboard, over the side, dark adaption);
- (xvi) conning arrangements (CCTV, communications, go/no-go indication);
- (xvii) transfer routes (stores, personnel, liquids); and
- (xviii) adjacent shell openings, appendages and discharges in way.

(c) **System Operational Concept**: A System Operational Concept for the operation and interfacing of boats, watercraft and waterborne craft that details the capability and functionality under defined operating and reversionary conditions. The System Operational Concept is to be agreed between the designers and Owners and is to include (as applicable):
- (i) The particulars of each boat or permanently embarked watercraft intended to be assigned to the vessel; including dimensions, weight, capacity, function and certification standards.
- (ii) The design parameters for waterborne craft intended to be temporarily carried or operated alongside; including length, weight, freeboard, securing arrangements, embarkation position.
- (iii) Details of all launch and recovery appliances; including Safe Working Load (SWL), design margins, design standards, operating limitations, additional factors of safety, modes of operation, operating angles.
- (iv) Details of all launch, embarkation, transfer and recovery equipment to be used, including safe combinations, certification standards, SWL.
- (v) Plans showing each proposed combination of equipment, fully rigged, at varying stages of deployment for each station.
- (vi) Details of the range of ship's speeds, sea and environmental conditions under which each boat or watercraft operation may be undertaken.
- (vii) Details of control, monitoring and communication facilities required to conduct boat operations.
- (viii) Details of arrangements for operations in darkness.
- (ix) Manning requirements.
- (x) Identification of defined transverse requirements for the parent vessel as applicable to the boat, watercraft or associated equipment, e.g. shock, high/low temperature operations.

(d) **Integration Assessment Report:** An assessment of suitability demonstrating that the boats and permanently embarked watercraft intended to be operated are compatible with the stowage arrangements, launch and recovery equipment and operating conditions proposed for the parent vessel. *See Vol 3, Pt 1, Ch 7, 5.2 Boat Specification.*

(e) **Hydrodynamics/Sea-keeping Reports:** A report showing that the position of each boat, watercraft, embarkation, transfer or recovery station has been appropriately sited to allow for operations in the range of defined operating conditions; including during preparation, operation and whilst boats and watercraft are waterborne alongside.

(f) **Risk Assessment Report:** A report showing that operational hazards associated with the use of boat stations during boat operations have been identified and once identified, managed to ensure that risks to personnel are minimised; *see Vol 2, Pt 1, Ch 3, 18 Risk Assessment (RA).*

(g) **Testing and trials procedures:** A schedule of testing and trials to demonstrate that systems and arrangements are capable of operating as described in the System Operational Concept. The testing and trials procedures are to include details of through life annual survey and load testing which includes the periodicity of load testing for different items of equipment.

(h) **Operator Guidance**: Operator Guidance is to be provided in accordance with *Vol 3, Pt 1, Ch 7, 9 Operator Guidance* and submitted to LR for information.

3.3 Survey and test requirements

3.3.1 Initial inspection, testing and trials are to be carried out to LR's satisfaction to demonstrate that arrangements, systems and equipment operate and function as stated in the System Operational Concept.

3.3.2 The suitability of the launch and recovery equipment shall be demonstrated during trials in accordance with *Vol 3, Pt 1, Ch 7, 5.8 Launch and Recovery Appliances 5.8.2*; however, confirmation of the required performance in the full range of required operations shall be provided by the Owner at the first Annual Survey.

3.3.3 Periodic survey of the arrangements is to be completed in conjunction with the Class Annual Survey in accordance with the requirements defined in *Vol 1, Pt 1, Ch 3, 2.4 Other Notations, 2.4.9*.

3.3.4 Survey, testing and marking of launch and recovery equipment are to be in accordance with *Ch 12 Testing, Marking and Surveys* of the *Code for Lifting Appliances in a Marine Environment* as applicable; note that enhanced design factors of safety may be required with reference to handling of personnel and load testing will be required consistent with the enhanced system design requirements. This equipment is to be included in the *Register of Ship's Lifting Appliances and Cargo Handling Gear* under the scope of the **LA**, **LAP** or **LAC** notations as appropriate. *See Vol 1, Pt 1, Ch 2, 3.10 Other notations 3.10.3*.

3.3.5 Any changes to the designations or classes of boats or permanently fitted watercraft associated with the **BOATS** notation are to be submitted to LR for review. The validity of certification for boats or watercraft permanently fitted onboard is to be verified as a part of the Annual Survey, however the survey of these is outside the scope of the **BOATS** notation.

■ *Section 4*
General requirements

4.1 Application

4.1.1 This Section details the requirements for onboard arrangements for the launch, recovery and carriage of small boats and watercraft and for the interfacing of the parent vessel with waterborne craft alongside, or persons in the water.

4.1.2 Application of this chapter will also facilitate the verification of the performance requirements of ANEP-77 NATO *Naval Ship Code, Chapter V, Regulation 5, 6, 7, and 12*.

4.1.3 Vessels compliant with the requirements of this chapter will be eligible for the **BOATS** notation, indicating that the onboard arrangements for the launch, recovery and carriage of small boats and for interfacing of the vessel with waterborne craft alongside or persons in the water are demonstrated to be in accordance with the requirements of this Chapter and the applicable requirements of the ANEP-77 NATO *Naval Ship Code (NSC)*.

4.1.4 The **BOATS** notation does not include boats or watercraft which are launched and recovered or carried in a well dock area, stern ramp or launched within a separate launching cradle. These may be considered subject to special consideration.

4.1.5 Where a boat, watercraft or station forms part of the escape, evacuation and rescue arrangements for the parent vessel, compliance with the relevant requirements for escape, evacuation and rescue are to be complied with separately.

4.2 Definitions

4.2.1 The following definitions are used for the purposes of this Section.

4.2.2 **Boat**: A boat shall be taken to mean any manned/unmanned vessel provided onboard a parent vessel as a part of its ship type capability which is launched and recovered whilst underway at sea, e.g. ship's boat, landing craft. It is not intended to include dedicated survival craft, such as lifeboats or dedicated rescue boats; however, it does include boats with a dual purpose.

4.2.3 **Watercraft**: Watercraft shall be taken to mean any manned/unmanned vessel provided onboard a parent vessel as a part of its capability which is deployed to the sea surface using onboard lifting appliances or dedicated launch and recovery appliances, whilst the parent vessel is stationary (or underway but not making way), e.g. ROV, UUV, Mexiflote, USV, workboat, passenger tender.

4.2.4 **Waterborne craft**: A waterborne craft shall be taken to mean any manned/unmanned vessel with which the parent vessel interacts with whilst it is waterborne alongside – it may or may not be hosted onboard; e.g. (hosted) ROV, UUV, Mexiflote, USV, workboat, passenger tender; (un-hosted) bunker barge, pilot boat, tug boat, pontoon, passenger transfer vessel.

4.2.5 **Boat Station**: A defined area on the parent vessel where a boat or watercraft is stowed, prepared, launched from and recovered to during an operational cycle; it includes the area occupied by the boat or watercraft, the handling space, the launch and recovery appliance and the control station.

4.2.6 **Control Position**: A position from which control of the equipment associated with boat operations or alongside operations is physically undertaken using the control interface.

4.2.7 **Conning Position**: The position from which control of the parent vessel is exercised by an Officer responsible for oversight of all boat or alongside operations; this may also include a secondary conning position.

4.2.8 **Defined Operating Conditions**: The defined range of conditions in which boat operations, alongside operations or recovery operations are required to be conducted, including at least the following: day/night operations, sea-state, wind speed, tempo, ahead speed, external air temperature, safe working loads.

4.2.9 **Embarkation Station**: A defined location from where access from the ships side to a waterborne craft alongside may be undertaken, or vice versa.

4.2.10 **Launch and recovery equipment**: Any equipment required to enable the boat to be launched and recovered from the parent vessel, including lifting appliances, painter arrangements or boat guides.

4.2.11 **Observation Position**: A position which may be, but is not necessarily, incorporated into the boat station, and from where the launch, recovery or embarkation cycle may be observed in all required operating conditions.

4.2.12 **Parent Vessel**: The naval vessel to which the requirements of this Section are being applied with respect to boats and watercraft which are hosted onboard.

4.2.13 **Recovery Position**: A position from which a person may be recovered to the parent vessel from the sea surface.

4.2.14 **Securing Point**: A location provided with appropriate securing or attachment points from which a boat or watercraft may be moored, towed or secured to; this includes locations for painter booms and recessed bollards.

4.2.15 **Transfer Position**: A position from which stores, cargo, liquids, munitions, etc. may be transferred to and from the parent vessel to a boat or watercraft alongside.

4.3 Operational safety considerations

4.3.1 Launch and recovery of boats at sea whilst underway is a hazardous peacetime activity practised and conducted on a nearly continual basis in a wide range of conditions and sea states; similarly, the at-sea transfer of people and cargo to and from waterborne craft alongside or the sea surface also presents significant hazards. It is important that the following areas are considered when designing, building, operating and maintaining systems for the launch, recovery and carriage of small boats and for the associated interfacing of the parent vessel with waterborne craft or personnel alongside:

(a) Launch and recovery whilst underway or 'at-sea': Launch and recovery of boats whilst underway or in heavy sea states results in high dynamic loads and motions which are difficult to quantify and present significant hazards when the boat and parent vessel are connected via the launch and recovery appliance.
(b) Close proximity of disproportionately sized vessels whilst underway or 'at-sea': Wake and wave interaction areas alongside parent vessels whilst underway or at-sea present a greater hazard to boats and watercraft when operating in proximity, particularly when connected.
(c) Transfer of Personnel: Lifting appliance design codes stipulate enhanced factors of safety, specific machinery arrangements, and more frequent testing for equipment used for the launch and recovery of personnel, particularly under 'at-sea' conditions and must be carefully designed to meet the enhanced operating tempos and dynamic loads expected for the parent vessel operations.
(d) Safety of Personnel: Care is to be taken in the design and operation of boat, embarkation and recovery systems to minimize risks to personnel who are engaged in the operation, are alongside or are transferring to and from the parent vessel.

4.3.2 Compliance with the requirements of this Chapter addresses the hazards identified above but relies on the appropriate specification and management of operational requirements by the Owner and the appropriate identification and management of hazards associated with those operational requirements by the Designer and Equipment Suppliers.

4.3.3 The designer should engage with the system operators to ensure that, in addressing the areas described above, the system design takes account of the required competencies, training and experience of the intended crew and is optimised to improve operational safety.

4.3.4 Where required by the Owner, the **HCD1**(Boat Operations) notation may also be selected to provide enhanced assurance of the human-centred design process, *see Vol 1, Pt 1, Ch 2, 3.10 Other Notations 3.10.27*.

4.3.5 The provision of suitably trained, qualified and experienced crew is the responsibility of the Owner.

■ *Section 5*
Arrangements for the launch and recovery of boats whilst underway

5.1 General

5.1.1 This Section details the requirements for onboard arrangements for the launch, recovery and carriage of boats carried as part of the ship type capability for the parent vessel, which are typically launched and recovered whilst the parent vessel is underway during increased at-sea conditions.

5.1.2 For watercraft and other boats which are hosted onboard the parent vessel but not launched whilst underway in increased at-sea conditions *see Vol 3, Pt 1, Ch 7, 6 Arrangements for the launch and recovery of boats and watercraft whilst stationary.*

5.2 Boat specification

5.2.1 Boats which are carried onboard and provide a ship type capability are to be compatible with the stowage arrangements and launch and recovery equipment provided onboard the parent vessel. This should include the following aspects:

(a) The boat operating limits are to be suitable for the intended operating conditions.
(b) The boat dimensions are to be compatible with the physical stowage space and the associated launch and recovery appliances.
(c) The boat weight is to be within the capacity of the nominated launch and recovery arrangements with an appropriate margin, *see Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Appliances 5.9.3*.
(d) The boat fittings for launch, recovery, mooring and towing alongside are to be compatible with the loads expected in all foreseeable operating conditions of the boat, with an appropriate margin, *see Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Appliances 5.9.3*.
(e) The boat fittings for securing onboard are to be compatible with the loads expected in all foreseeable operating conditions of the parent vessel.
(f) The boat control arrangements, release mechanism and painter arrangements are to be suitable for launch and recovery in the operating conditions defined in the System Operational Concept.
(g) The boat is to be compatible with the defined transverse requirements for the parent vessel, e.g. shock, high/low temperature operations. The applicable transverse requirements are to be identified for both stowed and operating conditions.

5.2.2 The boat should be certified in accordance with the requirements of an appropriate standard, which addresses the factors in *Vol 3, Pt 1, Ch 7, 5.2 Boat Specification 5.2.1*, for the carriage, launch and recovery operating conditions for the parent vessel. The *INSA Naval Boat Code*, or the *Grey Boat Code* are acceptable standards.

5.2.3 The suitability of the boats for the intended operations is to be to the satisfaction of the Owner, but an assessment of compatibility shall be submitted for review and boats shall be demonstrated to be compatible with the onboard arrangements and the launch and recovery equipment during trials.

5.2.4 The designation/class of boats associated with a parent vessel are to be recorded in the approval documentation and any changes to the designation/class are to be submitted for review.

5.3 Location of boat stations

5.3.1 Designated boat stations are to be provided for all embarked boats. The number and location of the boat stations are to be agreed between the designer and Owner but as a guide, for NS1 and NS2 type ships, it is expected that at least two will be provided, one each side of the parent vessel.

5.3.2 Boat stations shall be in such positions as to provide for launch and recovery having particular regard to clearance from the propeller and steeply overhanging portions of the hull and so that, as far as possible, boats can be launched in the area of the vertical flat side of the parent vessel.

5.3.3 Areas of the parent vessel presenting a danger to small boat operations, for example overhangs, appendages, shell doors, propellers or bow thrusters, are to be appropriately marked or identified on the hull.

5.3.4 The boat stations are to be positioned on the parent vessel such that, as far as possible, the effects of hull interaction between the parent vessel and boat are minimised across the range of operational deployment speeds and operating conditions.

5.3.5 Boat stations are to be located at a suitable height above the waterline and in positions to provide crew protection during operations in heavy weather conditions. If positioned forward, they shall be located abaft the collision bulkhead in a sheltered position.

5.3.6 The results of the sea-keeping analysis or model test are to demonstrate that boat stations are located such that the predicted RMS motions, deck wetness, Motion Induced Interruptions (MII) and Motion Sickness Incidences (MSI) for the location are within the limits specified in STANAG 4154 or other suitable standard for the defined set of operational conditions.

5.3.7 Preparation and handling of boats at any one boat station shall not interfere with the prompt preparation and handling of any other boat at any other station; however, it is not required that more than one boat can be launched at a time on each side.

5.3.8 Observation positions are to be provided and located so as to permit a clear field of view of each boat station and the sea surface alongside from at least two locations; one of which is to be coincident with the control position, the other is to be coincident with the conning position for the parent vessel. Observation from the conning position may be achieved using a suitable CCTV system.

5.3.9 Boat stations and observation positions are to be located such that exposure to high intensity noise for personnel involved in boat operations does not exceed 85 dB(A).

5.3.10 Boats are to be capable of being launched in a manned condition ready for operations; embarkation stations need not be coincident with boat stations, *see* *Vol 3, Pt 1, Ch 7, 7 Arrangements for interfacing with waterborne craft* for requirements.

5.4 Arrangement of boat stations

5.4.1 Each boat station is to consist of a stowage area for the boat, a launch and recovery appliance, a control position and observation position, a boarding position and sufficient associated clear area for preparation, maintenance and operational tasks. On some parent vessels the boats may be moved away from the boat station for storage and preparation between operations, for example to a mission bay.

5.4.2 The design of boat stations shall minimise risks to personnel during boat operations. A Risk Assessment is to be undertaken during the design phase to ensure that operational hazards are identified and once identified, managed during launch and recovery operations.

5.4.3 Wherever possible, boat stations are to be designed for boat operations to be carried out with guard rails in position; where this is not practicable, alternative arrangements for the safety of personnel are to be provided including the provision of equipment to prevent personnel falling overboard and anchor points for the attachment of a harness. A nonslip surface is to be provided and tripping hazards are to be eliminated wherever possible.

5.4.4 Arrangements are to be provided to enable the drainage of the boat station under the expected operational conditions.

5.4.5 Stowage and securing arrangements are to be provided suitable for the size and type of boat provided for at the boat station. These may be integral to the launch and recovery device and are to be suitable for the range of motions and accelerations expected for the parent vessel in service without causing damage to the boat.

5.4.6 A launch and recovery appliance is to be provided with sufficient clear area to enable the boat to be moved from the stowage location, outboard to a suspended position and lowered to the sea surface and recovered in all defined operational conditions.

5.4.7 A dedicated line tending position, and/or painter boom system is to be provided to enable positive control over the painter during launch and recovery operations.

5.4.8 The ship's side, below the boat station and above the turn of bilge, shall be free of overboard discharges, ventilators or obstructions, such as stabilisers, fenders or hard chines, where these might cause a hazard during launch and recovery. Consideration shall also be given to the management of side lead angles and motions in areas of high tumblehome.

5.4.9 During preparation, launch and recovery, the boat, its launch and recovery appliance, and the area of water into which it is to be launched shall be adequately illuminated by appropriate lighting. Where dark adaptation lighting is required this shall be suitable for night vision equipment.

5.4.10 Access arrangements shall be such that the boat can be boarded and launched directly from the stowed position with the maximum number of persons assigned to crew the boat. They shall also allow for the efficient handling of a stretcher case and a stretcher route is to be provided to an appropriate first aid facility.

5.5 Control and observation arrangements

5.5.1 Dedicated control and observation positions are to be provided for each boat station at the ship's side, from which the launch and recovery appliance together with any other mechanical equipment associated with the boat operation can be controlled and overseen.

5.5.2 Controls for launch and recovery appliances that are to be operated sequentially as part of a system are to be grouped for control by a single operator wherever possible. Control and indication shall be in accordance with the requirements of *Vol 2, Pt 9, Ch 7 Control, Alerts and Safety Systems*.

5.5.3 The control position is to be located so that the operator has a clear view of all launch and recovery equipment under their control.

5.5.4 Each observation position is to be provided with the necessary communication equipment to enable efficient communication with the boat crew, the deck crew (including painter handlers) and the control and conning positions to enable communications between all parties in all defined operational conditions and at all stages of deployment and recovery.

5.5.5 Stop/go indicators are to be provided at the boat station visible to all parties involved in the boat operation, including the boat operator; these shall be controlled from the conning position.

5.6 Ship structural arrangements

5.6.1 The support arrangements for launch and recovery appliances (including painter booms) are to be in accordance with the requirements of *Vol 1, Pt 4, Ch 1, 5.5 Crane Support Arrangements* for the load cases defined for the launch and recovery appliances.

5.6.2 The strength and stiffness of the securing arrangements and the supporting structures for the boats are to be sufficient to withstand the forces imposed by the boat for all possible operating conditions and loads from ship motions.

5.6.3 Where anchor points for attaching harnesses are provided, they are to be designed or selected from, and installed in accordance with, an appropriate standard (e.g. EN 795, *Personal fall protection equipment. Anchor devices*).

5.6.4 Structures and openings surrounding boat bays are to be weathertight or watertight commensurate with their position on the parent vessel in accordance with the applicable Rule requirements.

5.6.5 Where a structural closure has been provided for the side shell opening of the boat station, it is to comply with the relevant requirements of *Vol 1, Pt 4, Ch 3, 4 Side, stern doors and other shell openings*. Doors are to be provided with arrangements to lock them in the open position during launch and recovery operations.

5.6.6 Where a non-structural closure has been provided for the side shell opening of the boat station, for example for signature control or cold temperature operations, operating instructions are to be provided identifying actions to be taken during rough weather to avoid damage. Closures are to be provided with arrangements to lock them in the open position during launch and recovery operations.

5.7 Shipboard arrangements

5.7.1 Appropriate protective and safety equipment shall be provided for boat crews and, where necessary, launch and recovery crews. This should consist of anti-exposure suits including gloves, hoods and boots suitable for the defined range of operating temperatures, appropriate lifejackets and/or fall arrest systems, boat helmets, spray visors and safety knives. Sufficient numbers are to be provided to allow at least two simultaneous boat operations.

5.7.2 The suitability of the protective and safety equipment is to be in accordance with recognised standards to the satisfaction of the Owner and is to be demonstrated compatible with the operation of the boat and, where necessary, the launch and recovery equipment.

5.7.3 A wet locker with drying facilities shall be provided for wet protective and safety equipment; this shall be located near to each boat station.

5.7.4 In addition to the requirements of the applicable fire safety standards, a portable fire extinguisher suitable for extinguishing Class A and B fires is to be provided in a protected location adjacent to each boat station.

5.7.5 Where a boat station is enclosed on more than four sides, including by non-structural closures, or where it is covered and the height of the opening is less that the depth of the space, it is to be treated as an internal compartment and categorised appropriately in accordance with the nominated fire safety standard and fire safety measures applied accordingly.

5.7.6 Suitable provision is to be provided for the inspection, maintenance and testing of protective and safety equipment in accordance with the manufacturer's recommendations. A log of visual inspections, maintenance and testing is to be maintained onboard the parent vessel.

5.7.7 A preparation area shall be provided within the parent vessel to enable boat crews to prepare for boat operations; this shall contain lockers for the storage of personal items, access to the required protective and safety equipment, changing areas and toilet and shower facilities, and a briefing space. For NS3 vessels these need not be dedicated spaces.

5.7.8 Appropriate service arrangements are to be provided for each boat station, including a freshwater connection point, a low-pressure air point and a suitable electrical connection; together with the necessary hoses, cables and attachments to enable them to be used.

5.7.9 Where required, a refuelling/defueling system is to be provided and arrangements are to satisfy the relevant requirements of *Vol 2, Pt 7, Ch 4 Aircraft/Helicopter/Vehicle Fuel Piping and Arrangements*.

5.7.10 Where hot start, trace heating and battery-charging connections are provided, these are to be provided with quick-release connections in readily accessible locations to enable rapid launching. These connections shall be located away from refuelling connections and equipment.

5.7.11 Appropriate consumables, spare parts, tools and maintenance manuals are to be provided onboard in a designated area for the onboard maintenance of the boats and launch and recovery appliances. These are to be provided in sufficient quantity for the total number of boats of each class/type onboard.

5.8 Launch and recovery arrangements

5.8.1 Launch and recovery arrangements provided for boats which are carried onboard are to be compatible with the boats and their intended operational use. This should include the following aspects:

(a) The launch and recovery equipment is to be suitable for the intended operational use as defined in the System Operational Concept.
(b) The launch and recovery equipment is to be suitable for the physical dimensions of the boats associated with them.
(c) The launch and recovery equipment is to be designed to sustain the loads expected in all defined operating conditions, with an appropriate margin on safe working load for the boats and payload associated with them, including munitions where required, *see Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Appliances 5.9.3*.
(d) The launch and recovery equipment providing support for boats in the secured position is to be compatible with the loads expected in all foreseeable operating conditions on the parent vessel.
(e) The launch and recovery equipment control arrangements are to be suitable for launch and recovery of the boat in all defined operating conditions.
(f) The launch and recovery equipment is to be designed for the defined transverse requirements for the parent vessel, e.g. shock, high/low temperature operations.

5.8.2 The suitability of the launch and recovery equipment shall be demonstrated together with the onboard arrangements and the boats during trials. This may be limited to a maximum ahead speed of 5 knots in calm water during shipyard trials; however, confirmation of the required performance in the full range of required operations shall be provided by the Owner by the first Annual Survey.

5.9 Launch and recovery appliances

5.9.1 The launch and recovery appliances for boat operations are to be classed in accordance with the applicable requirements of the *Code for Lifting Appliances in a Marine Environment* within the scope of the **LA** notation, and the additional requirements of this section which are intended to take into account launch and recovery underway.

5.9.2 The specification of load cases for the approval of launch and recovery appliances are to be agreed between the Shipyard, the Manufacturer of the launch and recovery appliance and the Owner and submitted to Lloyd's Register (hereinafter referred to as LR) for acceptance. These are to be appropriate for boat operations within the defined operational conditions.

5.9.3 The SWL of the launch and recovery appliance is to exceed that of the boat in the fully loaded condition; it should also include a margin for boat growth of 10 per cent; and a swamping or overload margin of 5 per cent for fully enclosed boats, or 20 per cent for all other boats.

5.9.4 The launch and recovery appliance shall be capable of delivering the boat to the sea surface with the parent vessel in its lightest seagoing condition and under unfavourable conditions of heel and trim as determined from the defined operating conditions.

5.9.5 The launch and recovery appliance shall be capable of being operated continuously for at least 45 minutes and otherwise able to be left continuously in the 'energised' or 'power available' mode without overheating.

5.9.6 Each launch and recovery appliance and each item of loose gear is to be clearly and permanently marked with its safe working load and identifying marks in accordance with the *Code for Lifting Appliances in a Marine Environment*, *Ch 12, 2 Marking*.

5.9.7 Where a launch and recovery appliance is also used for other purposes, those uses shall not interfere with its ability to safely conduct boat operations; and loose gear associated with the launch and recovery of the boats is to be protected against damage from improper use.

5.9.8 Reversionary, degraded or post-damage capability for the parent vessel of any launch and recovery appliance is to be agreed with the Owner and the scope of assurance agreed with LR.

5.10 Release Arrangements

5.10.1 Every boat shall be fitted with an onboard release mechanism which is Type Approved in accordance with the IMO SOLAS Convention and the IMO International Life-Saving Appliance Code as amended.

5.10.2 Only one type of release mechanism shall be used for all similar boats onboard the ship and where possible this should be the same as the release mechanism for any separate dedicated rescue boats onboard.

5.10.3 Foul weather recovery strops shall be provided if heavy fall blocks constitute a danger to boat crews.

5.11 Painter Arrangements

5.11.1 A painter line is to be provided leading from forward of the boat station in an unobstructed arc to the bow of the boat. This may be handled manually or mechanically, for example using a painter boom, but is to be capable of being kept tensioned during all stages of the launch and recovery operation and recovered when not in use.

5.11.2 Every boat shall be fitted with a securing means to connect a painter near its bow. This shall be positioned such that the boat remains stable when being towed by the parent vessel making headway, for the worst-case combination of speed and sea-state, up to and including the defined operational conditions.

5.11.3 The means of securing the painter shall be capable of being released from a safe position within the boat. The status of the painter release and lifting appliance release shall be visible or known to the painter operator prior to release, including in low light conditions. Where possible these should be interlocked such that painter release is not possible prior to boat release from the launching appliance.

5.11.4 A manual override shall be provided for any securing means provided with electric or hydraulic actuation and failure of these systems shall not cause the securing means to release prematurely.

5.11.5 The painter line shall be provided with a steel ring at the boat connection end to aid release.

5.11.6 Release shall be possible at a range of angles, from directly ahead to 90° either side of the bow and from the deployed elevation angle of the line +/- 30° vertically. The release load may be reduced incrementally to 25 per cent transversely and 75 per cent vertically of the painter SWL at the maximum defined angles.

5.11.7 The painter SWL is to be taken as not less than one-third of the full weight of the boat, including personnel, fuel and equipment, together with any growth margin applied to the boat. For boats which are intended to be launched in excess of Sea State 3, actual loads are to be established through trials.

5.11.8 All structural components of the painter arrangement are to be designed in accordance with the applicable requirements of the *Code for Lifting Appliances in a Marine Environment, Ch 3 Launch and recovery appliances for survival craft and rescue boats.* However, a factor of safety of 6 over the material ultimate tensile strength of the component is to be used, instead of 4,5, to reflect the enhanced service use of the painter system; this may be related to shear stress and allowable compressive stress using the approach described in the *Code for Lifting Appliances in a Marine Environment, Ch 3, 1.6 Safety and stress factors.*

5.11.9 Painter booms shall be production tested to 2,2 times the SWL along the deployed line of action and to 1,1 times the SWL once installed onboard.

5.11.10 All loose gear including the securing means shall be prototype tested to 6 times the SWL without releasing, and release demonstrated for the load conditions defined in *Vol 3, Pt 1, Ch 7, 5.1 Painter Arrangements 5.11.6.* All items shall be supplied and tested in accordance with the applicable requirements of the *Code for Lifting Appliances in a Marine Environment, Ch 3, 1.9 Loose gear.*

5.11.11 Painter booms which are mechanically operated are to be capable of being controlled from the control position at the boat station and are to be able to be locked in position when in use. The status of the locking mechanism shall be visible or known to the control position operator prior to launch. They are to be readily accessible for maintenance and inspection.

■ *Section 6*
Arrangements for the launch and recovery of boats and watercraft whilst stationary

6.1 General

6.1.1 This section details the requirements for onboard arrangements for the launch, recovery and carriage of boats and watercraft hosted as part of the naval capability for the parent vessel, which are typically launched and recovered whilst the parent vessel is stationary (or underway but not making way) in limited sea conditions.

6.1.2 For boats which are hosted onboard the parent vessel and launched whilst underway in increased at-sea conditions *see Vol 3, Pt 1, Ch 7, 5 Arrangements for the launch and recovery of boats whilst underway.*

6.1.3 Watercraft are considered to be either permanently fitted onboard the parent vessel and provided with designated stowage and launch and recovery arrangements, or temporarily embarked on a mission basis and accommodated within the cargo/mission bay capacity of the parent vessel and launched and recovered using available means or specifically embarked arrangements.

6.2 Permanently fitted watercraft

6.2.1 Permanently fitted watercraft are in general to comply with the requirements of *Vol 3, Pt 1, Ch 7, 5 Arrangements for the launch and recovery of boats whilst underway* as identified below.

6.2.2 The requirements of *Vol 3, Pt 1, Ch 7, 5.2 Boat Specification* are to be applied as applicable for the fitted watercraft.

6.2.3 The requirements of *Vol 3, Pt 1, Ch 7, 5.3 Location of boat stations* are to be applied as applicable for the watercraft with the exception of *Vol 3, Pt 1, Ch 7, 5.3 Location of boat stations 5.3.3, Vol 3, Pt 1, Ch 7, 5.3 Location of boat stations 5.3.5* and *Vol 3, Pt 1, Ch 7, 5.3 Location of boat stations 5.3.10* which need not be applied since there is no underway launching.

6.2.4 The requirements of *Vol 3, Pt 1, Ch 7, 5.4 Arrangement of boat stations* are to be applied as applicable for the watercraft with the exception of *Vol 3, Pt 1, Ch 7, 5.4 Arrangement of boat stations 5.4.11* which need not be applied where alternative boarding arrangements are provided.

6.2.5 The requirements of *Vol 3, Pt 1, Ch 7, 5.5 Control and observation arrangements* are to be applied as applicable for the watercraft with the exception of *Vol 3, Pt 1, Ch 7, 5.5 Control and observation arrangements 5.5.5,* which need not be provided since there is no underway launching.

6.2.6 The requirements of *Vol 3, Pt 1, Ch 7, 5.6 Ship structural arrangements* are to be applied as applicable for the watercraft.

6.2.7 The requirements of *Vol 3, Pt 1, Ch 7, 5.7 Shipboard arrangements* are to be applied as applicable for the watercraft with the exception of *Vol 3, Pt 1, Ch 7, 5.7 Shipboard arrangements 5.7.1* to *Vol 3, Pt 1, Ch 7, 5.7 Shipboard arrangements 5.7.3, Vol 3, Pt 1, Ch 7, 5.7 Shipboard arrangements 5.7.6* and *Vol 3, Pt 1, Ch 7, 5.7 Shipboard arrangements 5.7.78* which need not be applied since there is no underway launching.

6.2.8 The requirements of *Vol 3, Pt 1, Ch 7, 5.8 Launch and Recovery Arrangements* are to be applied as applicable for the watercraft with the exception of *Vol 3, Pt 1, Ch 7, 5.8 Launch and Recovery Arrangements 5.8.2* which may be undertaken whilst alongside.

6.2.9 The requirements of *Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Appliances* are to be applied as applicable for the watercraft with the exception of *Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Arrangements 5.9.4* and *Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Arrangements 5.9.5* which need not be applied since there is no underway launching. Additionally the launch and recovery appliance need not be classed within the scope of the **LA** notation required by *Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Arrangements 5.9.1* but may be certified under the **LAP** or **LAC** notations. Finally, the swamping or overload margin required by *Vol 3, Pt 1, Ch 7, 5.9 Launch and Recovery Arrangements 5.9.3* need not be applied since there is no underway launching.

6.2.10 The requirements of *Vol 3, Pt 1, Ch 7, 5.10 Release arrangements* are to be applied as applicable for the watercraft; an offload release only may also be permitted where appropriate to the operation.

6.2.11 The requirements of *Vol 3, Pt 1, Ch 7, 5.11 Painter arrangements* need not be applied since there is no underway launching; however, suitable provision for tending the watercraft during launch and recovery is to be provided.

6.3 Temporarily embarked watercraft

6.3.1 Watercraft which are temporarily embarked for specific mission requirements are not required to be identified in advance for the purposes of these requirements; however, where the requirement for provision of a temporary mission capability and space, power and weight envelope is defined by the Owner, the requirements of *Vol 3, Pt 1, Ch 7, 6.3 Temporarily embarked watercraft 6.3.2* to *6.3 Temporarily embarked watercraft 6.3.7* are to be applied.

6.3.2 An appropriate area is to be provided for the stowage and securing of an agreed range of sizes and types of watercraft. This is to include sufficient associated clear area and provision for preparation, maintenance and operational tasks. The requirements of an appropriate fire safety standard area shall also be complied with for any hazards associated with the watercraft's energy supply and mission equipment.

6.3.3 Suitable securing arrangements are to be provided for the range of motions and accelerations expected for the parent vessel in service without causing damage to the watercraft.

6.3.4 An appropriate lifting appliance is to be provided with sufficient clear area to enable the watercraft to be moved from the stowage location, outboard to a suspended position and lowered to the sea surface and recovered in all defined operational conditions.

6.3.5 Where manned watercraft are intended to be launched and recovered by lifting appliances other than launch and recovery appliances, then those are to be appropriately certified for manned operations and any SWL limitations or operating restrictions clearly identified.

6.3.6 Loose gear associated with the launch and recovery of the watercraft is to be protected against damage from improper use.

6.3.7 During preparation, launch and recovery, the watercraft, its launch and recovery appliance, and the area of water into which it is to be launched shall be adequately illuminated by appropriate lighting. Where dark adaptation lighting is required this shall be suitable for night vision equipment.

6.3.8 An observation position is to be provided with the necessary communication equipment to enable speedy and efficient communication with the lifting appliance operators, the deck crew (including painter handlers) and the control and conning positions, to enable watercraft operations in all defined operational conditions and stages.

■ *Section 7*
Arrangements for interfacing with waterborne craft

7.1 General

7.1.1 This section details the requirements for onboard arrangements for the interfacing of the parent vessel with waterborne craft alongside, including from astern.

7.2 Embarkation and disembarkation of personnel

7.2.1 A minimum of two embarkation stations are to be provided to enable personnel to embark and disembark safely from either side of the parent vessel. These may be separate or combined with those positions used when alongside in port and need not be coincident with the boat stations.

7.2.2 Embarkation stations shall be positioned such that, as far as possible, they are along the parallel mid-body of the parent vessel and clear of any steeply overhanging portions of the hull, overboard discharges, fendering or protrusions.

7.2.3 Safe, convenient and unobstructed passage to and from the parent vessel's deck is to be provided at the ship's side and fitted with handholds to allow ready access. Where a ship's side door is used this shall not open outwards.

7.2.4 When used for a pilot or other civilian personnel, embarkation stations are to comply with the requirements of the IMO SOLAS Convention, as amended, Chapter V, Regulation 23 'Pilot Transfer Arrangements'.

7.2.5 Suitable clear area shall be provided at the embarkation position for all personnel involved in supporting the embarkation operation and a clear route from the embarkation point to a suitable muster or dispersal point for all personnel embarking or disembarking.

7.2.6 During embarkation or disembarkation, the embarkation station, ship's side, embarkation equipment, and the area of water alongside shall be adequately illuminated by appropriate lighting. Where dark adaptation lighting is required this shall be suitable for night vision equipment.

7.2.7 Each embarkation station is to be provided with the necessary communication equipment to enable speedy and efficient communication with the waterborne craft alongside, the deck crew and the conning positions, to enable embarkation or disembarkation operations in all defined operational conditions and stages.

7.2.8 Each embarkation station is to be provided with an appropriate means of transferring between the ship's side and the sea surface. For transfers of limited numbers of people this is to be a rope ladder complying with an appropriate standard, e.g. ISO 799 *Ships and marine technology – Pilot ladders* or *IMO International Life-saving Appliance Code, Section 6.1.6 Embarkation Ladders*. For transfers of large numbers of people this is to be a scrambling net or similar also complying with an appropriate standard.

7.2.9 Each embarkation means used shall be not less than 1,5 m in height and capable of reaching the sea surface in a single length for all conditions of loading and trim and with an adverse list of 15º. They shall be capable of lying flat against the hull and secured to the parent vessel at appropriate points using equipment and fittings at least as strong as the nominated design load.

7.2.10 Where the distance from sea surface to the point of access to the parent vessel exceeds 9 m, an accommodation ladder is to be used in combination with the pilot ladder. Where this is done, the accommodation ladder shall be sited leading aft and means of securing it to the ship's side at the lower platform provided. The pilot ladder and side ropes are to be secured to the ship's side 1,5 m above the bottom platform or, when led through a hatch in the bottom platform, at the height of the rails.

7.2.11 Accommodation ladders forming a means of embarkation or disembarkation at sea are to be in accordance with *Vol 1, Pt 3, Ch 4, 9.8 Means of Embarkation and Disembarkation* and *MSC Circular.1331 – Guidelines for Construction, Installation, Maintenance and Inspection/Survey of Means of Embarkation and Disembarkation*.

7.2.12 All embarkation equipment shall be clearly identified with tags or other permanent marking so as to enable identification of each item for the purposes of survey, inspection and record keeping. A record shall be kept on the ship as to the date each identified item is placed into service and any repairs effected. It is recommended that a spare is provided onboard for all ladders or nets.

7.2.13 All embarkation equipment shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.

7.2.14 The following associated equipment shall be kept at hand ready for immediate use when persons are being transferred:
(a) two side ropes of not less than 28 mm and not more than 32 mm in diameter, properly secured to the ship and rising to the height of the stanchions or bulwarks at the point of access to the deck before terminating at a ring plate on deck;
(b) a lifebuoy equipped with a self-igniting light; and
(c) a heaving line.

7.2.15 Where the alongside waterborne craft is intended to be secured to the parent vessel, suitable fittings shall be provided in the ship's side or at the deck edge to allow for the connection. These are to be in accordance with *Vol 1, Pt 3, Ch 5, 6.6 Bollards, fairleads and bull rings* and *Vol 1, Pt 3, Ch 5, 6.9 Support structure of deck fittings*.

■ *Section 8*
Recovery of persons from the water

8.1 General

8.1.1 This section details the requirements for onboard arrangements for the recovery of persons in the water to the parent vessel.

8.2 Recovery of persons from the water

8.2.1 A means of providing assisted recovery of persons from the water shall be provided on each side of the parent vessel; this should consist of a fixed provision onboard the parent vessel, such as a Swimmer of the Watch davit, but may be made by the provision of rescue boats or helicopters where acceptable to the Naval Administration.

8.2.2 For recovery means utilising a fixed onboard provision the following requirements are to be met.

8.2.3 A fixed arm davit having a minimum safe working load (SWL) of 300 kg to facilitate a two-person lift or, for vessels with a reduced number of crew, a minimum SWL of 150 kg for a single-lift capability is to be provided on each side.

8.2.4 The davit shall be located so as to minimise the distance to the sea surface and the effects of parent vessel pitching and be well clear of the propeller or other ship's side protrusions. Where possible it should be located coincident with the embarkation station.

8.2.5 It shall allow the swimmer and the recovered person to be returned onboard via a break in the rail or bulwark and have sufficient clear deck space for the swimmer and recovered personnel, including line handlers. A stretcher route is to be provided to an appropriate first aid facility.

8.2.6 The davit shall be manually slewed and operated and provided with a hoisting rope fitted with a stopper and soft eye for the attachment of individual rescue strops. Recovery is expected to be conducted by crew members; however, a spool shall be provided for the hoisting line when not in use.

8.2.7 A separate reel with ship's side attachment shall be provided at each installation with a floating lifeline of not less than the ship's length overall in length.

8.2.8 The provision of rescue strops, recovery stretchers or baskets and swimmer's equipment is to be to the satisfaction of the Owner but shall be demonstrated compatible with operation of the installation.

8.2.9 All structural components of the davit and winch arrangement are to be designed in accordance with the applicable requirements of the *Code for Lifting Appliances in a Marine Environment*, *Ch 3 Launch and recovery appliances for survival craft and rescue boats.* They shall be tested in accordance with the requirements of the *Code for Lifting Appliances in a Marine Environment*, *Ch 3, 1.12 Testing,* although this need only be done at 0° heel and trim.

8.2.10 All loose gear shall be prototype tested to 6 times the SWL and supplied and tested in accordance with the applicable requirements of the *Code for Lifting Appliances in a Marine Environment*, *Ch 3, 1.9 Loose gear.*

8.2.11 The recovery position, ship's side and the area of water alongside shall be adequately illuminated by appropriate lighting. These are to be positioned to avoid shining directly on the swimmer and recovered person. Where dark adaptation lighting is required this shall be suitable for night vision equipment.

8.2.12 All recovery equipment shall be clearly identified with tags or other permanent marking so as to enable identification of each item for the purposes of survey, inspection and record keeping. A record shall be kept on the ship as to the date each identified item is placed into service and any repairs effected.

8.2.13 All recovery equipment shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.

8.2.14 For the recovery of large numbers of persons from the water, ship-specific plans and procedures shall be provided, taking into account the guidelines in *MSC Circular 1447 'Guidelines for the Development of Plans and Procedures for Recovery of Persons from the Water.'* The plans and procedures shall identify the equipment intended to be used for recovery purposes and measures to be taken to minimize the risk to shipboard personnel involved in recovery operations.

8.2.15 Where the parent vessel has a specific role in Humanitarian Assistance and Disaster Relief (HADR) involving the intended recovery of large numbers of persons from the water, then the specific provision of recovery arrangements is outside the scope of this notation. Guidance for this role may be taken from the Emergency Response and Rescue Vessel Survey Guidelines and Management Guidelines published by Oil and Gas UK.

8.2.16 Where acceptable to the Owner, compliance with this section may be used for the provision of a means of ingress and egress to the water for divers.

■ *Section 9*
Operator guidance and information

9.1 General

9.1.1 Operators shall be provided with adequate information and instructions for the operation and maintenance of all boat and watercraft arrangements and systems. This is to be provided in a single manual in a consistent layout containing, as a minimum, of the following information;

(a) equipment descriptions and arrangement diagrams;
(b) instruction and maintenance manuals for all launch and recovery equipment;
(c) safe operational limits and design loads;
(d) specification of compatible boats and watercraft;
(e) manning and competency requirements;
(f) standard and reversionary operating procedures;
(g) heavy weather and extreme temperature operating guidance;
(h) shipboard inspection and test requirements; and
(i) shipboard maintenance and fault-finding requirements.

9.1.2 All control positions and mechanical equipment shall be provided with permanent, easily understood instructions for their operation.

9.1.3 A record of fixed items shall be maintained, including their certification and records of inspections, maintenance, tests and/or repairs effected. This shall include the Register of Lifting Appliances in accordance with *Vol 1, Pt 1, Ch 2, 3.10 Other notations, 3.10.3*.

9.1.4 A record of loose gear and portable items shall be maintained, including the date identifiable items are placed into service, their certification and records of inspections and/or repairs effected.

9.1.5 The Operator Guidance and Record Books are to be populated and provided at delivery, but suitability of the operating procedures and guidance is to be confirmed by the Owner by the first Annual Survey.

9.1.6 Information shall be presented in a language and format that can be understood by the Operator in the context in which it is required.

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